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Research Article

A new species and new records of *Chumma* (Araneae, Macrobunidae) from South Africa

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Abstract

A new species of the genus *Chumma* Jocqué, 2001, *C. foordi* **sp. nov.**, is described from the Western Cape, South Africa. New distribution records for *C. bicolor* Jocqué & Alderweireldt, 2018, *C. foliata* Jocqué & Alderweireldt, 2018 and *C. gastroperforata* Jocqué, 2001 are presented. The genus is recorded from the Northern Cape Province for the first time, extending its range extensively to the northwest by approximately 450 km. The distribution of all *Chumma* species is mapped.

Key words: Amaurobiidae, Aranei, Chummidae, forest, fynbos, spider

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Introduction

Chumma Jocqué, 2001 is a small genus with nine described species restricted to southern Africa. Most have been collected in the southern parts of South Africa (eight species), with one species recorded from the enclave of Lesotho. All the species were described in two publications (Jocqué 2001; Jocqué and Alderweireldt 2018). Originally, the genus was described in a monogeneric and monotypic family, Chummidae Jocqué, 2001. However, it was later synonymized with Amaurobiidae Thorell, 1869 based on a molecular analysis using six genes (Wheeler et al. 2017), with its placement in the subfamily Macrobuninae Bonnet, 1957 also supported by Crews et al. (2020) and Kulkarni et al. (2023) based on analyses of multiple genes. Recently, *Chumma* was included in Macrobunidae when the subfamily was elevated to family rank based on analysis of ultraconserved elements (Gorneau et al. 2023). In all these studies, *Chumma* was clearly nested within the Macrobuninae/-idae clade, usually as sister to the South African genus *Chresiona* Simon, 1903, supporting the synonymy of Chummidae with Macrobunidae, as defined by Gorneau et al. (2023).

While studying spiders collected in the Western Cape, the first author found trionychan specimens with only one pair of spinnerets visible through a compound microscope. More precise examination using photography revealed six spinnerets, with two pairs considerably reduced. Discussions with the second author revealed that these specimens belong to *Chumma*. The goal of this

paper is to provide a description of this new species, new records of the genus collected subsequent to the recent treatment of the genus by Jocqué and Alderweireldt (2018), and comments on its relationships.

Material and methods

The material examined in this study is deposited in the National Collection of Arachnida, ARC – Plant Health and Protection, Pretoria (NCA) and the National Museum, Bloemfontein (NMBA). All measurements are given in millimeters. The distribution map was prepared using SimpleMappr (www.simplemappr.net).

Photographs of specimens and their copulatory organs were obtained using an Olympus Camedia E-520 camera attached to an Olympus SZX16 stereomicroscope at the Zoological Museum of the University of Turku, Finland. Digital images of different focal planes were stacked with Helicon Focus™ 8.1.1. The palp of the paratype male was dehydrated in a series of increasing ethanol concentrations, glued to a stub, sputter-coated with gold and examined using a JEOL JSM-6490LV scanning electron microscope.

Abbreviations: **ALE** – anterior lateral eye; **ALS** – anterior lateral spinnerets; **AME** – anterior median eye; **PLE** – posterior lateral eye; **PLS** – posterior lateral spinnerets; **PME** – posterior median eye; **PMS** – posterior median spinnerets.

Taxonomy

Macrobunidae Bonnet, 1957

Remarks. The type species of *Macrobunus* Tullgren, 1901, *M. backhauseni* (Simon, 1896) was redescribed, redefined and extensively illustrated by Almeida-Silva (2013), with an updated diagnosis of the genus provided. However, this work has never been formally published and is thus not included in the literature on the species or in the World Spider Catalog (WSC 2024). With the exception of *Chumma*, genera included in the Macrobunidae have no dorsal abdominal scuta. Almeida-Silva (2013) mentions that in several genera considered in the family the ALS are usually larger than the PMS and PLS and mentioned a vestigial form: “Males with reduced PLS may lack spigots on these” (Almeida-Silva 2013). Jocqué (2001: fig. 2a) and Almeida-Silva (2013) showed that the PMS and PLS of female *C. inqueta* Jocqué, 2001 were similar in size and both smaller than the ALS. In this paper, we image the spinnerets of male *Chumma* for the first time, showing that both posterior pairs are significantly reduced in size and can be considered vestigial (Fig. 1E).

Chumma foordi sp. nov

https://zoobank.org/69F6393F-3C9D-4D99-A6FB-1D5925D260E9

Figs 1–3

Material examined. *Holotype*. South Africa • ♂; *Western Cape Province*; Cape Town, Kirstenbosch Botanical Garden; 33°58'54"S, 18°25'19"E; 30 Jan. 2017; Y.M. Marusik leg.; litter in Afromontane forest (NMBA 19612).

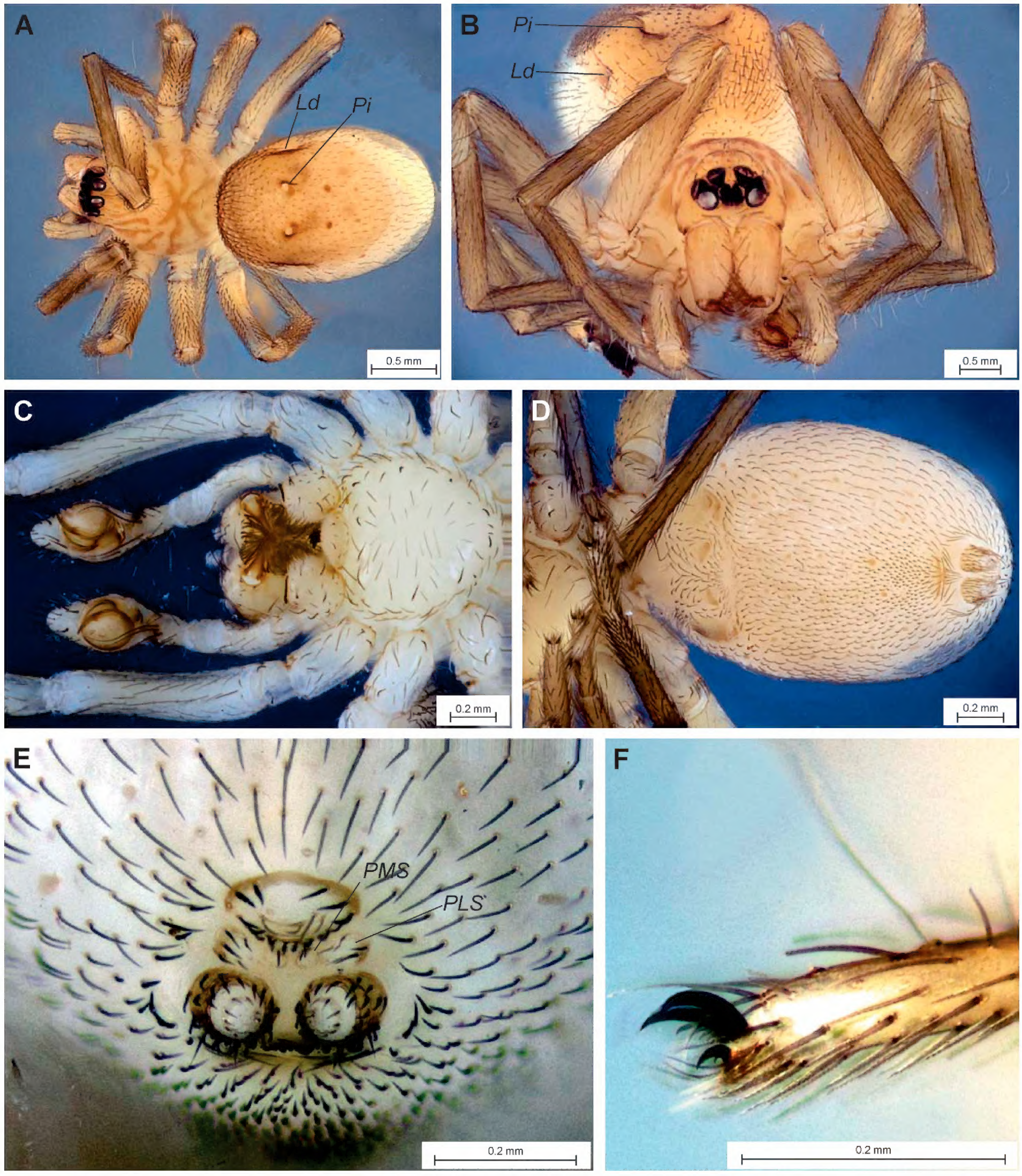

Figure 1. Holotype male of *Chumma foordi* sp. nov., somatic morphology **A** habitus, dorsal **B** same, frontal **C** prosoma, ventral **D** abdomen, ventral **E** spinnerets, caudal **F** tarsus I, dorso-lateral. Abbreviations: *Ld* lateral depression; *Pi* round pit of scutum; *PLS* posterior lateral spinneret; *PMS* posterior median spinneret.

Paratype. 1♂, same data as holotype.

Other material. 17 juveniles, same data as holotype.

Diagnosis. Males of the new species differ from all congeners by having a pair of deep round pits (*Pi*) on the scutum (vs. absent or elongate) and a lateral depression (*Ld*, lacking in all other species) (see Jocqué 2001; Jocqué and

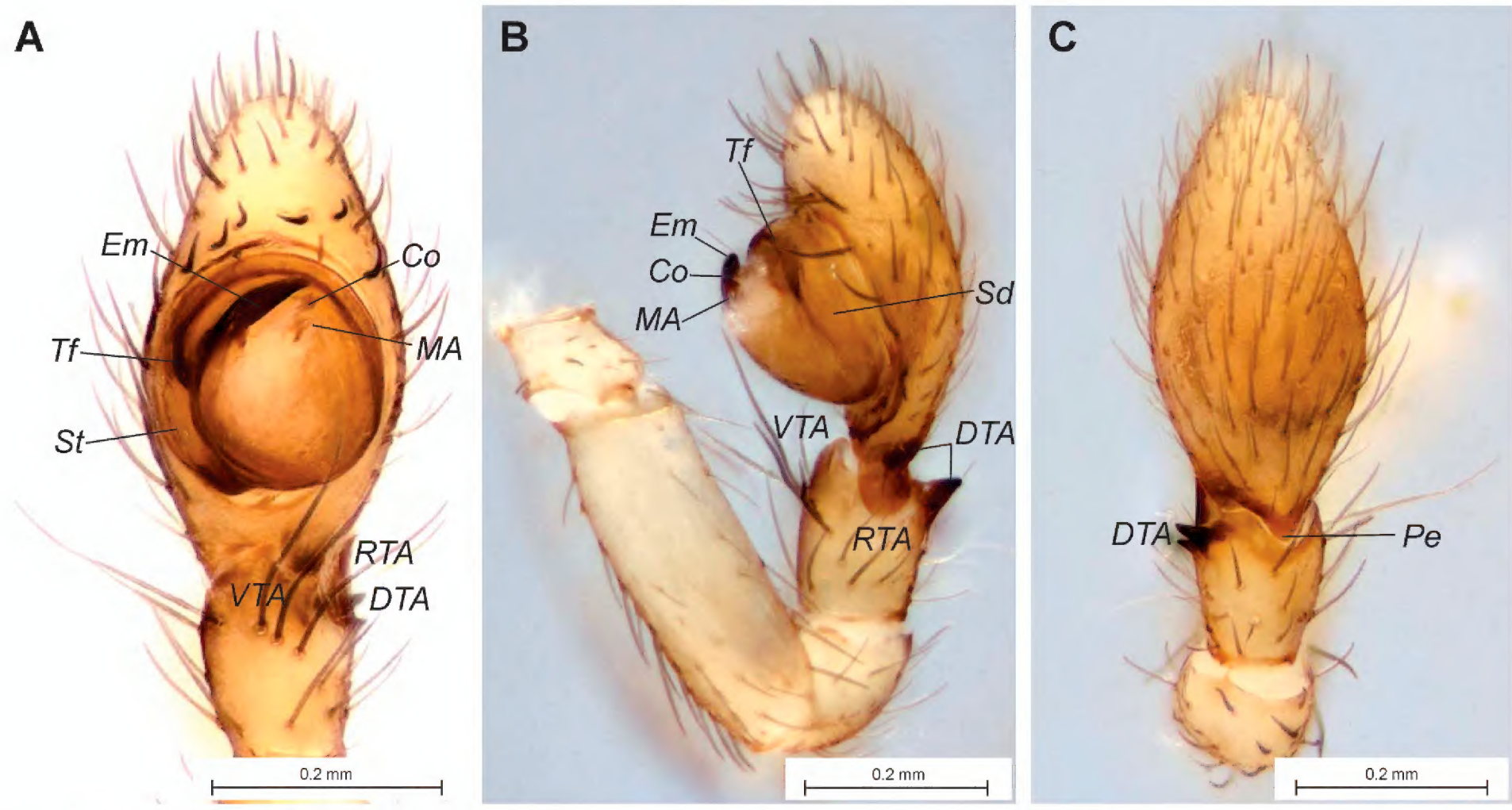

Figure 2. Holotype male of *Chumma foordi* sp. nov. **A** terminal part of left palp, ventral **B** whole left palp, retrolateral **C** left palpal patella, tibia and cymbium, dorsal. Abbreviations: *Co* conductor; *DTA* dorsal tibial apophysis; *Em* embolus; *MA* median apophysis; *Pe* proximal extension of cymbium; *RTA* retrolateral tibial apophysis; *Sd* sperm duct; *St* subtegulum; *Tf* tegular furrow; *VTA* ventral tibial apophysis.

Alderweireldt 2018). The new species also differs by the short embolus, which is somewhat similar to that in *C. interfluvialis* Jocqué & Alderweireldt, 2018 but has four rather than three tibial apophyses and a round rather than oval tegulum (cf. Figs 2, 3 with Jocqué and Alderweireldt 2018: fig. 5A–C). Coloration yellow to light brown dorsally and pale yellow ventrally; carapace with dark radial stripes. Female unknown.

Description. Male: Total length 2.83. Carapace 1.14 long, 0.93 wide, sternum 0.64 long and wide; chelicera 0.29 long; labium 0.14 long, 0.27 wide; abdomen 1.79 long, 1.19 wide, scutum 1.29 long. ALE~PLE~PME ca. 0.1, AME 0.06; AME-AME 0.02, AME-ALE 0.01, ALE-ALE 0.19, PME-PME 0.06, PME-PLE 0.05, PLE-PLE 0.41; clypeus near ALE 0.06.

Carapace cream, with yellow-brown radial stripes directed towards palps and legs (Fig. 1A). Distal part of chelicerae and maxillae with dense setae; maxillae as long as wide; labium semicircular, ca. 2.3 times wider than long; sternum as wide as long, about round. Abdomen oval, with dorsal scutum occupying ca. ¾ of abdomen length, ca. 1.4 times longer than wide, scutum darker than rest of abdomen (Fig. 1A, B), with pair of deep round pits (*Pi*) in anterior 1/3, pair of sigilla behind pits and lateral depressions (*Ld*); modified setae located only in anterior part of scutum; venter uniformly colored, with pair of scuta at epiandrus, setae on epiandrus shorter than others (Fig. 1C); short setae also concentrated anterior to tracheal spiracle (Fig. 1D); colulus represented by group of setae; under light microscopy only two spinnerets can be recognized, but three pairs actually present, with PMS and PLS vestigial (Fig. 1E); tarsi with three claws (Fig. 1F).

Leg measurements of *Chumma foordi* sp. nov. holotype male:

	Fe	Pt	Ti	Mt	Ta	Total
Palp	0.44	0.2	0.14	-	0.44	1.22
I	1.07	0.4	0.97	0.86	0.61	3.91
II	0.93	0.36	0.74	0.71	0.57	3.31
III	0.8	0.31	0.57	0.69	0.36	2.73
IV	1.17	0.4	0.94	1.0	0.44	3.95

Legs spineless. Chelicera with two promarginal and three retromarginal teeth.

Palp as in Figs 2, 3: femur 3 × longer than wide, as long as cymbium; patella as long as femur wide; tibia cylindrical, 1.3 × longer than wide, with four short apophyses: ventral (*VTA*), retrolateral (*RTA*) and two spike-like subdorsal (*DTA*); cymbium lenticular in dorsal view, twice as long as wide, widest at middle, with proximal extension (*Pe*) facing towards tibial notch; tegulum round in ventral view, as long as wide, with deep distal tegular furrow (*Tf*); sperm duct running along lateral margin of tegulum, lacking any loops, originating at ca. 9 o'clock position; conductor (*Co*) small, almost indistinct; median apophysis (*MA*) small, membranous, finger-like; embolus (*Em*) small, with rounded anterior and straight posterior parts, about 4 × longer than maximal width, originating at ca. 9 o'clock position and terminating at about 0:30; subtegulum (*St*) exposed prolaterally.

Etymology. Named after our late friend and colleague Stefan Foord, in recognition of his contributions to the study of spider ecology and biodiversity, particularly in South Africa.

Distribution. Only known from the type locality (Fig. 4).

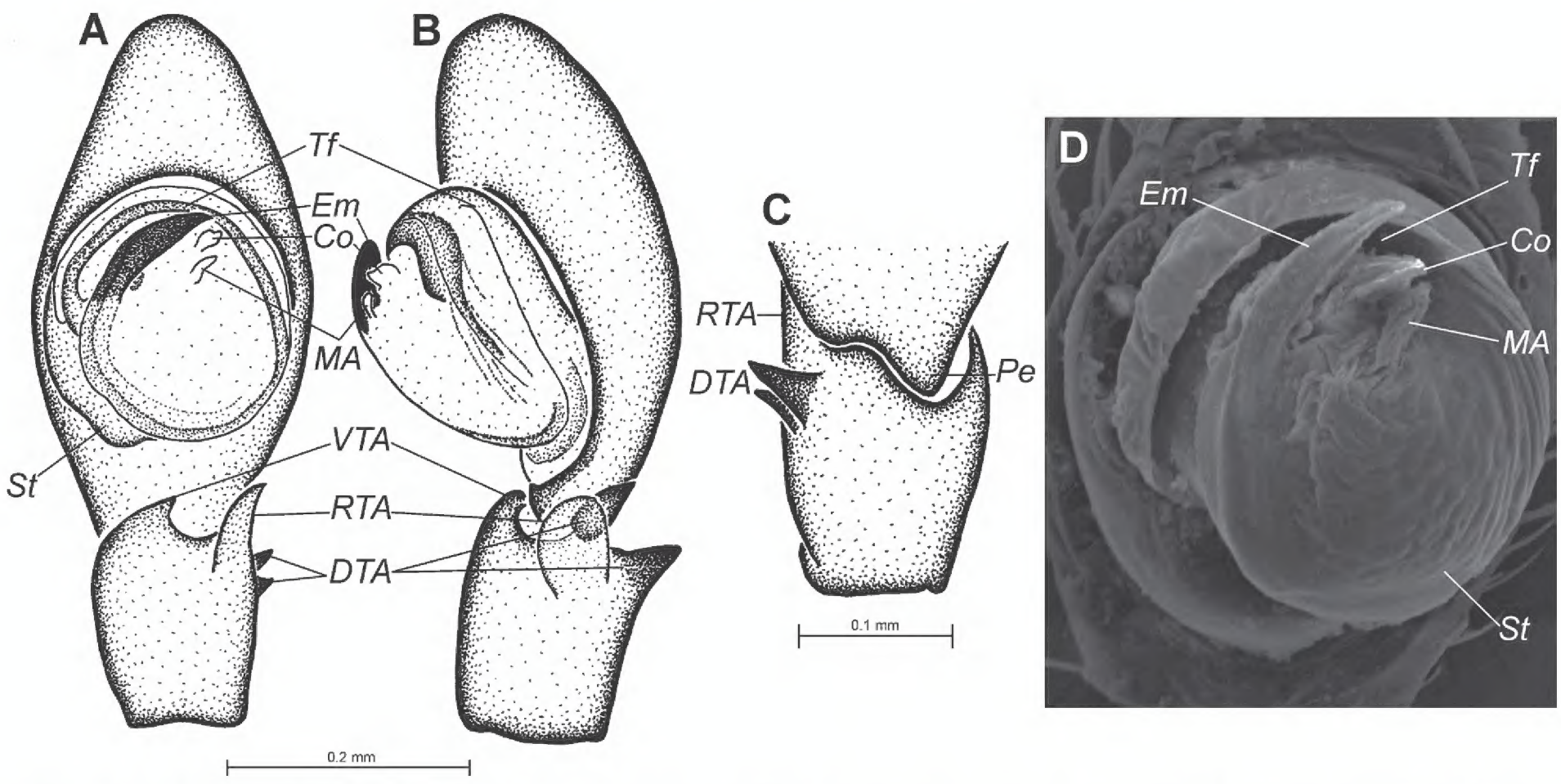

Figure 3. Line drawings of holotype male (**A–C**) and scanning electron microscope photo of paratype male (**D**) of *Chumma foordi* sp. nov. **A** left palpal tibia and tarsus, ventral **B** same, retrolateral **C** left palpal tibia and basal part of cymbium, dorsal **D** right palpal tegulum, mirrored, ventral. Abbreviations: *Co* conductor; *DTA* dorsal tibial apophysis; *Em* embolus; *MA* median apophysis; *Pe* proximal extension of cymbium; *RTA* retrolateral tibial apophysis; *St* subtegulum; *Tf* tegular furrow; *VTA* ventral tibial apophysis.

Chumma bicolor Jocqué & Alderweireldt, 2018

Chumma bicolor Jocqué & Alderweireldt, 2018: 4, figs 1A–E, 2A (♀).
Chumma bicolor: Dippenaar-Schoeman et al. 2022: 10, 2 figs (♀).

Material examined. South Africa; Western Cape Province • 2 imm. 2♀; Hoekwil, Bergplaas Rd hiking trail; 33°54.706'S, 22°40.689'E; 475 m a.s.l.; 10 Oct. 2022; C. Haddad et al. leg.; sifting litter, fynbos; NMBA 19424 • 2 subadult ♂ 1♀; Plettenberg Bay, Bobbejaanskloof Private Nature Reserve; 33°57.805'S, 23°21.232'E; 175 m a.s.l.; 10 Oct. 2022; C. Haddad et al. leg.; sifting litter, Afromontane forest; NMBA 19487 • 1 subadult ♀; Riversdale, Garcia Nature Reserve, Sleeping Beauty trail; 33°57.357'S, 21°13.255'E; 530 m a.s.l.; 8 Oct. 2023; C. Haddad et al. leg.; sifting litter, fynbos; NMBA 19276.

Distribution. Previously known from the type locality (Goukamma in the Western Cape) only. Reported from three additional localities here (Fig. 4). This species is sympatric with *C. gastroperforata* Jocqué, 2001 at Bobbejaanskloof Private Nature Reserve.

Chumma foliata Jocqué & Alderweireldt, 2018

Chumma foliata Jocqué & Alderweireldt, 2018: 7, figs 2B–D, 3A–F (♂♀).
Chumma foliata: Dippenaar-Schoeman et al. 2022: 11, 3 figs (♂♀).

Material examined. South Africa; Eastern Cape Province • 2♂; Grahamstown, Coombs District, Clayputs Farm, New Windmill Camp; 33°19.900'S, 26°51.311'E; 12 Mar. 2020; R. Booysen & A. Marais leg.; hand collecting; NCA 2020/1107.

Distribution. Previously known from the type locality (Hogsback) only. Reported from an additional locality here (Fig. 4).

Chumma gastroperforata Jocque, 2001

Chumma gastroperforata Jocqué, 2001: 486, figs 8b, 9a, b, 10a–e, 11a, b (♂♀).
Chumma gastroperforata: Jocqué & Alderweireldt, 2018: 15, fig. 7H (♂♀).
Chumma gastroperforata: Dippenaar-Schoeman et al. 2022: 12, 5 figs. (♂♀).

Material examined. South Africa; Western Cape Province • 2♀; George, Outeniqua Nature Reserve; 33°56.015'S, 22°25.543'E; 260 m a.s.l.; 9 Oct. 2022; C. Haddad et al. leg.; sifting litter, Afromontane forest; NMBA 19339 • 1♂; Gondwana Game Reserve; 34°02'49"S, 21°52'57"E; 25 Mar. 2005–3 Jan. 2006; M. Burger et al. leg.; pitfall and funnel traps; NCA 2011/843 • 1♂; Outeniquastrand, near George; 34°02.754'S, 22°17.037'E; 7 Jan. 2015; C. Haddad leg.; base of grass tussocks; NCA 2015/1753 • 3♂; Plettenberg Bay, Bobbejaanskloof Private Nature Reserve; 33°57.805'S, 23°21.232'E; 175 m a.s.l.; 10 Oct. 2022; C. Haddad et al. leg.; sifting litter, Afromontane forest; NMBA 19486 • 2 subadult ♂ 2♂ 1 subadult ♀; Plettenberg Bay, Keurbooms Nature Reserve; 34°00.070'S, 23°24.165'E; 220 m a.s.l.; 11 Oct. 2022; C. Haddad et al. leg.; sifting litter, Afromontane forest; NMBA 19552.

Figure 4. Distribution records of *Chumma bicolor* Jocqué & Alderweireldt, 2018 (circles), *C. foliata* Jocqué & Alderweireldt, 2018 (stars), *C. foordi* sp. n. (hexagon), *C. gastroperforata* Jocqué, 2001 (triangles) and an undetermined *Chumma* sp. (inverted triangle). Black icons are published records and white icons are new records presented here. Published records are sourced from Jocqué (2001), Jocqué and Alderweireldt (2018) and Dippenaar-Schoeman et al. (2022), with historical misidentifications corrected.

Distribution. Jocqué (2001) initially described *C. gastroperforata* based on material from four localities (Witelsbos [type locality], Van Huyssteenbos, Silverrivier and Saasveld), but later included the paratypes from the latter two localities under *C. striata* Jocqué & Alderweireldt, 2018, together with its holotype from Rosendal farm near Prince Albert. However, Dippenaar-Schoeman et al. (2022) incorrectly included all five localities under *C. gastroperforata*; only Witelsbos and Van Huyssteenbos are still valid. We report *C. gastroperforata* from five additional localities here (Fig. 4).

Chumma sp.

Material examined. South Africa; Northern Cape Province • 1 subadult ♂; Nigramoep Slow Living Guest Farm; 29°31.460'S, 17°35.628'E; 840 m a.s.l.; 10 Jan. 2021; C. Haddad et al. leg.; leaf litter, west-facing slope; NCA 2021/652.

Distribution. Although this species is only known from a single subadult male, it is the first record from the Northern Cape Province, extending the range of the genus by more than 450 km northwards in the western extreme of its distribution (Fig. 4). This disjunct distribution of the genus suggests that it likely occurs in Fynbos and Succulent Karoo biotopes along the western interior of South Africa too. Its apparent absence here could be attributed to the historically poor sampling effort in this part of the country, whereas the southern and central parts of the country where most *Chumma* have been recorded (Figs 4, 5) are comparatively well-sampled (Dippenaar-Schoeman et al. 2023).

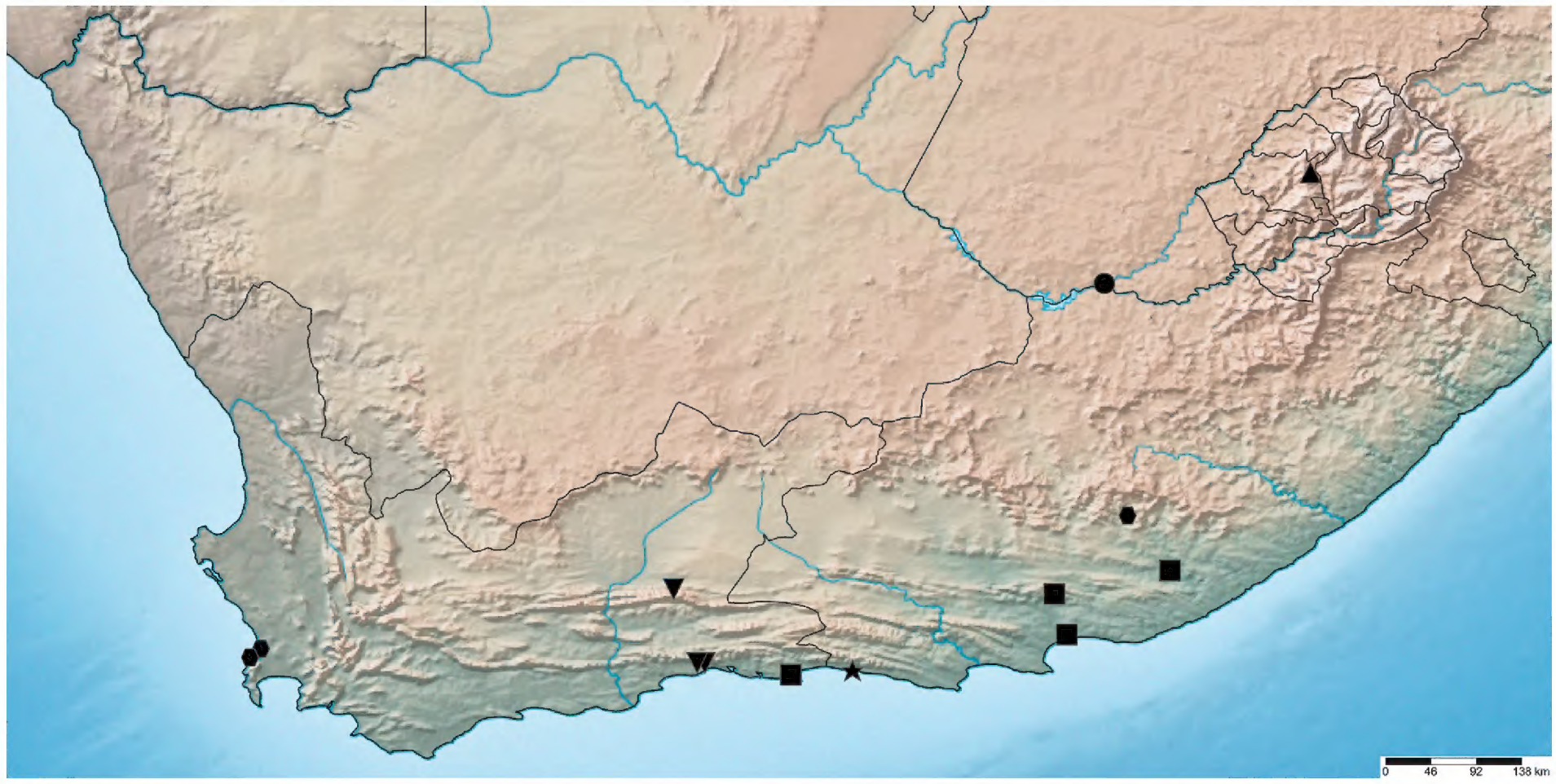

Figure 5. Distribution records of *Chumma inquieta* Jocqué, 2001 (squares), *C. interfluvialis* Jocqué & Alderweireldt, 2018 (circle), *C. lesotho* Jocqué & Alderweireldt, 2018 (triangle), *C. striata* Jocqué & Alderweireldt, 2018 (inverted triangles), *C. subridens* Jocqué & Alderweireldt, 2018 (hexagons) and *C. tsitsikamma* Jocqué & Alderweireldt, 2018 (star). Records are sourced from Jocqué (2001), Jocqué and Alderweireldt (2018) and Dippenaar-Schoeman et al. (2022), with historical misidentifications corrected.

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Additional information

Conflict of interest

The authors have declared that no competing interests exist.

Ethical statement

No ethical statement was reported.

Funding

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Author contributions

Y.M. prepared the species description and microscope images and contributed to writing the text. C.H. provided new distribution records, prepared the distribution map and contributed to writing the text.

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Data availability

All of the data that support the findings of this study are available in the main text or Supplementary Information.

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Supplementary material 1

Details of collecting data of *Chumma* spiders from western South Africa

Authors: Yuri M. Marusik, Charles R. Haddad

Data type: xlsx

Explanation note: Summary of collecting data of *Chumma* species from South Africa (new species and new records).

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